

IN THE TITLE

Please amend the title as follows:

MULTI-TONE COMMUNICATIONS APPARATUS, SYSTEMS, AND METHODS

IN THE SPECIFICATION

Please amend the Specification as follows:

a) Please amend paragraph [0015] on page 3 as follows:

[0015] Each tone 124 may be created using a set of voltage-controlled oscillators (VCOs) VCO1, VCO2, ..., VCON designed with substantially identical active nodes, and capacitive loading proportional to the ratios of their nominal frequency of operation, for example. In some embodiments, only the VCO having the highest operating frequency (e.g., VCO1 operating at [[10GHz]] 10 GHz) may form a portion of a phase-locked loop (PLL) 128 driven by a frequency reference 130. Since ratio matched capacitive loading may be adjusted so that the slave VCOs VCO2, VCO3, ..., VCON produce tones frequencies related as a ratio to the frequency of the master VCO VCO1, the slave VCOs VCO2, VCO3, ..., VCON may operate to track the master VCO VCO1 and provide their correct tones' frequency whenever the master VCO VCO1 locks onto its design frequency (e.g., 10 GHz). For example, if the frequency of VCO1 is about 10 GHz, the frequency of VCO2 might be about 8 GHz (8/10 of VCO1 frequency), the frequency of VCO3 might be about 6 GHz (6/10 of VCO1 frequency), and the frequency of VCON might be about 4 GHz (4/10 of VCO1 frequency), such that all of the tones fall within allocated band limits of about 3 GHz to about 10 GHz. Of course, other master oscillator frequencies and slave ratio frequencies may be selected.

b) Please amend paragraph [0020] on page 5 as follows:

[0020] Therefore, in some embodiments of the invention, a transmission apparatus 100 may include a multi-bit encoder 116 coupled to a multi-tone generator 120 to provide a multi-tone communications signal 134 having a substantially simultaneous multi-tone signaling bandwidth of greater than about 20 percent of an associated carrier frequency. For example, in some embodiments, if the carrier frequency is about 5 GHz, the signaling bandwidth may be greater than about 1 GHz. In some embodiments, for example, multi-tone simultaneous signaling from

3 GHz to 10 GHz may correspond to a ~~[[7GHz]]~~ 7 GHz bandwidth signal on top of an implicit 6.5 GHz carrier.

c) Please amend paragraph [0032] on page 8 as follows:

[0032] FIG. 4 is a block diagram of various apparatus 400, ~~[[440]]~~ 444 and systems 476 according to several embodiments. In some embodiments, a system 476 may include one or more transmission apparatus 400 (which may be similar to or identical to the transmission apparatus 100 described with respect to FIG. 1). Similarly, in some embodiments, a system 476 may include one or more reception apparatus 444 (which may be similar to or identical to the reception apparatus 244 described with respect to FIG. 2).